

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A method for inputting data in a character-by-character manner to a mobile communication device having a constrained keyboard with ambiguous keys, the mobile communication device also having a microphone for picking up voice input, said method comprising:

(a) receiving voice input from a user using the microphone, the voice input pertaining to a single character;

(b) detecting, substantially concurrently with said receiving (a), that one of the ambiguous keys of the keyboard has been selected by the user as a selected key, the selected key having a plurality of characters associated therewith;

(c) obtaining reference patterns associated with the selected key, the reference patterns being a set of predetermined reference patterns selected from a plurality of reference patterns based on the selected key;

(d) comparing the voice input with the obtained reference patterns to produce comparison data; and

(e) identifying a character that was intended to be input by the user based on the comparison data, said identifying (e) of the character that was intended to be input by the user includes at least (e1) determining whether one of the obtained reference patterns matches the voice input based on the comparison data, and (e2) selecting the character from the plurality of the characters associated with the selected key in accordance with the determined one of the obtained reference patterns,

wherein said identifying (e) is synchronized with the detection of the selected key by said detecting (b), and

wherein the obtained reference patterns are speech reference patterns.

2. (Previously Presented) A method as recited in claim 1, wherein said obtaining (c), said comparing (d) and said identifying (e) are initiated with the detection of the selected key by said detecting (b).

3. (Original) A method as recited in claim 1, wherein the selected key has a plurality of characters associated therewith, and wherein the character identified is one of the plurality of the characters associated with the selected key.

4. (Original) A method as recited in claim 3, wherein each one of the obtained reference patterns pertains to one of the plurality of characters associated with the selected key.

5. (Cancelled).

6. (Cancelled).

7. (Cancelled).

8. (Original) A method as recited in claim 1, wherein the characters comprise letters or numeric characters.

9. (Currently Amended) A computer readable medium having program code for disambiguating a key selection to a constrained input keyboard of a computing device, the key selection being ambiguous as to which a plurality of characters is to be input, said computer readable medium comprising:

program code for detecting whether an ambiguous key of the keyboard has been selected as a selected key;

program code for receiving a voice input corresponding to a single one of the characters associated with the selected key, the voice input being received substantially concurrently with the detection of the selected key; and

program code for determining the one of the characters that has been input based on the selected key and the voice input, said program code for determining includes at least

program code for obtaining reference patterns associated with the selected key;

program code for comparing the voice input with the obtained reference patterns to produce comparison data; and

program code for identifying the one of the characters that has been input based on the comparison data, and

wherein said program code for obtaining, said program code for comparing and said program code for identifying are initiated with the detection of the selected key by said program code for detecting.

10. (Original) A computer readable medium as recited in claim 9, wherein the computing device is a mobile computing device having the constrained input keyboard integral thereto.

11. (Previously Presented) A computer readable medium as recited in claim 10, wherein the computing device is a mobile telephone.

12. (Cancelled).

13. (Cancelled).

14. (Currently Amended) A computer readable medium as recited in claim ~~9~~13, wherein the selected key has a plurality of characters associated therewith, and wherein the character identified is one of the plurality of the characters associated with the selected key.

15. (Original) A computer readable medium as recited in claim 14, wherein the computing device is a mobile computing device having the constrained input keyboard integral thereto.

16. (Previously Presented) A computer readable medium as recited in claim 15, wherein the computing device is a mobile telephone.

17. (Original) A key disambiguate system for an ambiguous key input device having a plurality of keys, with each key representing a plurality of different characters, wherein the improvement comprises completely disambiguating a user's key input of a single action on a single one of the keys through use of a user's sound input pertaining to an intended character associated with the single one of the keys.

18. (Previously Presented) A key disambiguate system as recited in claim 17,
wherein the user's sound input is received substantially simultaneously with the
user's key input, and

wherein said key disambiguate system is internal to a mobile telephone having
the ambiguous key input device.

19. (Previously Presented) A key disambiguation system, comprising:

a microphone for picking up an analog voice input;

an analog-to-digital converter coupled to said microphone, said analog-to-digital
microphone converts the analog voice input to a digital voice input;

a data reduction unit coupled to said analog-to-digital circuit, said data reduction
unit identifies distinguishing characteristics within the digital voice input as processed
voice input;

an ambiguous key input device having a plurality of keys, each of the keys
representing a plurality of different characters;

a keyboard controller coupled to said ambiguous key input device, said keyboard
controller detects a user's selection of one of the keys of said ambiguous key input
device and invokes a key selection event;

a reference sound patterns source coupled to said keyboard controller, said
reference sound patterns source stores a plurality of reference sounds;

a pattern comparison unit coupled to said data reduction unit and said reference
sound patterns source, said pattern comparison unit operates to compare the
processed voice input with selected ones of the reference sound patterns to produce
comparison data; and

a key determination unit coupled to said pattern comparison unit, said key
determination unit operates in response to the key selection event to determine the one
of the characters being input based on the comparison data.

20. (Previously Presented) A key disambiguation system as recited in claim 19,
wherein said key determination unit identifies a matching one of the selected reference
sound patterns, and determines the one of the characters being input from the matching
of the selected reference sound patterns.

21. (Currently Amended) A mobile communication device having a constrained keyboard with ambiguous keys in a character-by-character manner, said method comprising:

a microphone configured to receive voice input from a user, the voice input pertaining to a single character;

means for detecting, substantially concurrently with the receipt of the voice input via said microphone, that one of the ambiguous keys of the keyboard has been selected by the user as a selected key;

means for obtaining reference patterns associated with the selected key;

means for comparing the voice input with the obtained reference patterns to produce comparison data; and

means for identifying a single character that was intended to be input by the user based on the comparison data.

22. (Currently Amended) A method for inputting data to a mobile communication device having a constrained keyboard with ambiguous keys, the mobile communication device also having a microphone for picking up voice input, said method comprising:

(a) receiving user inputs, the user inputs including a voice input from a user using the microphone and a key selection of at least a single one of the ambiguous keys of the keyboard, the key selection has a plurality of characters associated therewith, the voice input pertaining to a single character corresponding to the key selection, and the voice input and the key selection being received substantially simultaneously;

(b) obtaining reference patterns associated with the key selection, the reference patterns being a set of predetermined set of reference patterns selected from a plurality of reference patterns based on the key selection;

(c) comparing the voice input with the obtained reference patterns to produce comparison data; and

(d) identifying a single character that was intended to be input by the user based on the comparison data, said identifying (d) of the character that was intended to be input by the user includes at least (d1) determining whether one of the obtained reference patterns matches the voice input based on the comparison data; and (d2) selecting the character from the plurality of the characters associated with the key selection in accordance with the determined one of the obtained reference patterns,

wherein said identifying (d) is synchronized with the detection of the key selection, and
wherein the obtained reference patters are speech reference patterns.

23. (Cancelled).

24. (Original) A method as recited in claim 22, wherein the key selection has a plurality of characters associated therewith, and wherein the character identified is one of the plurality of the characters associated with the key selection.

25. (Original) A method as recited in claim 24, wherein each one of the obtained reference patterns pertains to one of the plurality of characters associated with the key selection.

26. (Cancelled).

27. (Cancelled).

28. (Previously Presented) A method as recited in claim 1, wherein said receiving (a) of the voice input is provided by the user without prompting the user to provide a voice input.

29. (Previously Presented) A computer readable medium as recited in claim 13, wherein said program code for receiving of the voice input is provided by a user without prompting the user to provide a voice input.

30. (New) A key disambiguation system as recited in claim 19, wherein said key determination unit includes at least a circular buffer.

31. (New) A method as recited in claim 1, wherein the mobile communication device further has a circular buffer, and

wherein the circular buffer is used in said identifying (e) of the character that was intended to be input by the user by being synchronized with the detection of the selected key by said detecting (b).

32. (New) A computer readable medium as recited in claim 9, wherein the mobile computing device has a circular buffer, and

wherein the circular buffer is used in by said program code for identifying the character that was intended to be input by the user by being synchronized with the detection of the selected key.

33. (New) A method as recited in claim 22, wherein the mobile communication device further has a circular buffer, and

wherein the circular buffer is used in said identifying (d) of the single character that was intended to be input by the user by being synchronized with the detection of the selected key by said detecting (b).